

**Amendments to the Drawings:**

Figure 2 is amended to include the legend “Prior Art”, as required in the middle of page 2 of the Office Action.

Replacement Sheet:

Figure 2.

## REMARKS

Applicants have carefully reviewed and considered the Examiner's Office Action dated February 16, 2006. Reconsideration is respectfully requested in view of the following comments.

By this Amendment, claims 1, 3-4, 6-7 and 9 are currently amended, and claim 5 is canceled. In addition, a replacement sheet showing Figure 2 as "Prior Art" is attached hereto. Claims 3 and 9 are written in independent form and withdrawn claim 4 is amended to depend from claim 3 and dependent claims 6-7 are amended to depend from claim 9. Accordingly, Claims 1-4, 6-7 and 9 are pending in this application, with claims 1-3, 6-7 and 9 currently under examination.

Claims 3, 6, and 9 were rejected under 35 U.S.C. §112, second paragraph for the reasons set forth at the bottom of page 2 to the top of page 3 of the Action. The foregoing amendments to claim 3 and 9 correct the areas identified in the Action. Applicants' representative has reviewed claim 6 for any indefinite language and could not find any. Thus, it is submitted that claims 3, 6, and 9 are fully definite under 35 U.S.C. §112, second paragraph and withdrawal of this rejection is respectfully requested.

Claims 1-3, 5 and 9 were rejected under 35 U.S.C. §102 (b) as explained in the middle of page 2 of the Action. Claim 1 is amended to recite the two configuration of the openings supported by page 10, lines 8-12 and shown in Figures 5a,b of the originally filed application. In as much as this rejection still applies to the amended claims, this rejection is respectfully traversed.

Hardinge is directed a pulverizing mill and process of pulverizing material that introduces air into the casing 12 through suitable inlet ports 78 near base 10. Figure 2 of

Hardinge shows a rectangular opening 78. There is no other description of inlets 78 than that set forth in column 8, lines 5-12 of Hardinge. Thus, while Hardinge may disclose multiple inlets 78 in Figure 1 and 3, there is no disclosure in Hardinge that these inlets are one of a first or second configuration wherein in the first configuration only a height (h<sub>2</sub>) of an opening of the multiple entry annular openings is varied while width (w) remains the same and in the second configuration both the height and the width of the opening are varied simultaneously keeping total area of entry the same as area of entry of a single opening, resulting in better uniformity in air flow around the air mill section and minimizing formation of eddies and vortices, as set forth in amended claim 1. Consequently, Hardinge fails to disclose the recited multiple annular openings on the outer wall of the air mill of the specific configuration that results in better uniformity in air flow than a single entry system and minimizes eddies and vortices. It is well established patent law that a reference cannot anticipate a claim if it does not disclose each and every recited feature. Applicants submit that Hardinge fails to disclose the recited multiple annular openings and thus, Hardinge cannot anticipate claim 1.

With respect to claim 2, Hardinge does not positively recite that inlets 78 are set 180° apart. Figures 1 and 3 are sectional view; but Hardinge does not indicate the plane from which these view are taken. Thus, the recited feature of claim 2 cannot be interpreted from the drawings with no disclosure supporting the interpretation. Further, claim 2 recites from amended claim 1 and is at least patentable for the reasons argued above.

Claim 3 adds to original claim 1 the feature that “a cross-sectional area of each opening of the multiple entry configuration is a fraction of an area required in a single

entry configuration [where] the fractional area of each entry [is] derived by dividing the area required for single entry by the number of entries proposed.” While Figures 1-3 of Hardinge illustrate inlets 78, nowhere does Hardinge describe the inlet area. Consequently, the inlet area cannot be implied to meet the recited claimed feature. The Examiner, without providing support, blindly asserts “Hardinge discloses a cross sectional area of each opening of the two entry configuration which is half of the area required in a single entry configuration.” However, as one skilled in the art would understand, simply because two inlets are employed does not automatically mean an opening would be half that of a single entry opening. The areas of openings depend on the performance and the design of the ducts, which must be checked by way of modeling and actual practice. Hardinge does not mention the inlet area, but merely states that air may be introduced through these inlets. Consequently, Hardinge fails to teach each and every recited feature of claim 3 as argued above. As a result, Hardinge cannot anticipate claim 3 and withdrawal of that rejection is respectfully requested.

With respect to claim 9, contrary to the Examiner’s assertion, Hardinge does not disclose a bowl mill where an air inlet is bifurcated with a partition for allowing half of the primary air to enter the air mill through a first opening and the other half of the primary air to enter a duct leading to a second opening, which is arranged 180° from the first opening. As argued above, Hardinge does not mention that the openings are arranged 180° apart, nor can the Figures provide this disclosure.

Moreover, nowhere in column 8, lines 5-12 of Hardinge is there a description of bifurcating an inlet so that half of the primary air goes through a first opening and the other half goes down a duct leading to a second opening as recited in claim 9. Thus, the

Examiner's position is not supported by Hardinge and Applicants submit that such a position is not tenable since there is no mention of bifurcation of a single entry anywhere in Hardinge and none of the Figures show a bifurcation of a single inlet. Applicants submit that bifurcation of a single inlet allows primary air to be distributed in a most cost effective and simplified construction as the same separator body is employed by bifurcation. It is especially beneficial for conversion of existing bowl mills with single entry of primary air. The bifurcation also has to be done in such a way that the air flow within the air inlet housing remains in the same circular direction and the two inlet flows do not disturb or oppose each other. The present invention discloses two specific ways of achieving this object: one by bifurcation of a single inlet and the other by separate entries. Consequently, Hardinge cannot anticipate claim 9 as it fails to teach a single inlet bifurcated so that two path exist a first opening and a duct leading to a second opening.

An examination of Hardinge's disclosure and Figures would not enable one of ordinary skill in the art to conclude that the direction of air is entering radially and moving upward. Hardinge does not show the effect of air going sideways on either side, as one side opposes or disturbs air coming from the other entry. Applicants submit that the two inlets taught by Hardinge will cause loss of energy and will be detrimental to overall mill performance. In fact, the openings of Hardinge will defeat the very purpose of uniform distribution of the air. Hence, the disclosure of Hardinge does not anticipate the inherent knowledge of these effects as described above. It is further submitted that no reputable international manufacturers of bowl mills has resorted to multiple or double entry opening as disclosed by the present invention, even though the Hardinge Patent was

published in 1954. The claimed invention produces a practical and useful bowl mill as verified by site testing. Hardinge does not disclose the claimed invention, recited in claims 1-3 and 9 and withdrawal of the rejection under 35 U.S.C. §102 is respectfully requested.

Claims 6 and 7 were respectively rejected under 35 U.S.C. §103(a) as being unpatentable over Hardinge in view of U.S. Patent No. 5,522,768 to Brodt et al. (hereinafter referred to as Brodt), or U.S. Patent Nos. 2,909,330 to Brundiek or 4,705,223 to Dibowski et al. (hereinafter referred to as Dibowski), as explained on pages 4 and 5 of the Action. These rejections are respectfully traversed.

The Examiner agrees that Hardinge does not disclose the recited blockage. However, it is the Examiner's position that Brodt "discloses an air flowing duct with a blockage or an air flow blocking curve in order to reduce air turbulence (Abstract, lines 8-12)". The Abstract (lines 8-12) of Brodt is reproduced as follows: "The supply air inlet is longitudinally displaced from the supply air outlet and is separated therefrom by a flow turbulence reducing straight duct section". We fail to see any link between the examiner's statement given in lines 8-12 of the Abstract to the claimed blockage. Brodt states that the turbulence is reduced by separating the air inlet and outlet by a straight duct section. It is clear that Brodt does not mention any blockage directing the two streams of air to flow in the same general direction after mixing as has been claimed to be achieved in the present invention. Thus, in addition to the features missing above from claim 9, the blockage of claim 6 is not taught by Brodt.

With respect to the Brodt's disclosure concerning a reduction in turbulence, column 3, lines 33-35 of Brodt disclose "This elongated straight flow section

substantially reduces the turbulence of the supply air prior to the supply air entering the supply air duct in the building”; and column 7, lines 33-35 of Brodt disclose “The first is that the turbulence of the supply air be diminished by flowing in a relatively long straight flow section”. These statements are clear that Brodt's statement about reduction in turbulence is by flowing through a long straight duct section and *not as per the words given by the Examiner*. To the contrary, Brodt is **not** related the provision of air directing vanes or an air flow blocking curve for allowing two separate streams of air to flow in the same, general direction, thus avoiding turbulence or loss of energy by opposing each other. Claim 6 has been amended to describe the air directing vanes shown in Figure 5a,b. It is respectfully submitted that claim 6 is patentable over any combination of Hardinge and Brodt and withdrawal of that rejection is requested.

Claim 7 adds the feature that the cross section of duct (23) is gradually decreased up to section (27). As argued above. Hardinge may disclose a multiple entry but does not disclose a single inlet bifurcated with two openings one of which is connected by a duct or a multiple of ducts or separate ducts. Hardinge does not disclose the bifurcated single entry arrangement claimed by Applicants.

The secondary reference to Brundiek, according to the Action, discloses a bowl mill with a decreasing cross-section for a duct leading to a second opening, in order to increase pressure. A thorough review of Brundiek does not reveal any such statement. The closest structure appears to be the air inlet 2 shown in Figure 1 of Brundiek. Reference number 2 is described by Brundiek in column 2, lines 6-7 as follows: “A lower part 1, which carries the roll mill, is provided with outlets 2 for tails which cannot be processed”. Tails or rejects from the mill come out of the bowl and gravity-fall into

the housing. The slant/slope shown in the bottom position part 2 of Figure 1 can at best be assumed for the tails or rejects to leave the system by gravity. If the slant or slope in the bottom portion of the housing were flat, the tail or rejects would not be able to exit the system and would accumulate there. It is unclear how the combined vane-rotator of Brundiek is considered a closely related art when the section to be modified is an inlet for air and Brundiek does not disclose a varying cross section of a duct for injecting air.

Let us now consider air entry, although direction of airflow points inwards and then going up, Brundiek does not provide any description, drawing or clue about the construction of the air inlet housing. Since only one sectional view is shown of outlets 2 in Figure 1 of Brundiek, no conclusions can be drawn about the cross-section of air inlet housing, the number of air entry, ducting, etc. Contrary to Hardinge, Brundiek describes reference numeral 2 as an outlet for tails. Thus, it is unclear why one of ordinary skill in the art would have been motivated to modify the inlets of Hardinge because outlets in a different technology and use slope as taught by Brundiek.

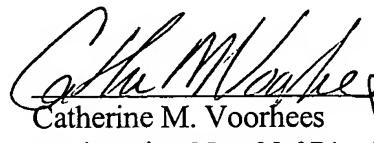
Likewise, Dibowski does not disclose the reduction in cross-section to increase the pressure of inlet air in its text or in the drawing. Again, one must assume that the Action refers to the arrow as shown as air inlet in Figure 1 of Dibowski. There is no reference number assigned to this feature and the Action does not describe its location. It can be seen that the cross-section of single entry of primary air gets reduced radially. In the case of a radially straight short duct, there is no loss of pressure (since there is no change in direction). Thus, reduction in cross-section is not necessary to compensate the loss of pressure. Though both Brundiek and Dibowski show a radial duct, as explained above, the reduction in cross-section is not related to the reduction in cross-section of the

circumferential duct as in Claim 7 of the present invention. Hence, claim 7 is not rendered unpatentable under 35 U.S.C. § 103 in view of any combination of Hardinge, Brundiek or Dibowski.

In view of the foregoing comments distinguishing the claimed invention from the prior art of record, it is believed that claims 1-3, 6-7 and 9 are allowable over the prior art of record and Applicants request withdrawal of the above rejections. Withdrawn claim 4 should be rejoined as claim 3 is generic. Accordingly, it is respectfully requested that a Notice of Allowance be issued indicating that claims 1-4, 6-7 and 9 are allowed over the prior art of record.

Should the Examiner believe that a conference would advance the prosecution of this application, the Examiner is encouraged to telephone the undersigned counsel to arrange such a conference.

Respectfully submitted,

  
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